

How Scientific Research in Moroccan university can use Technology to ensure an efficient Governance

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Abstract— In a context of E-Governance, modernization of higher education, scientific research at the Moroccan university is facing new challenges, such as :

- Orientation, enhancement and promotion of this component by responding to the needs of the socioeconomic community ;
- Development of the culture of communication and information by putting an end to practices that limit the dissemination of information ;
- Exploitation of new technologies in the management process of scientific research.

On the other hand, the technological revolution offers us several tools to support different fields and different activities, hence the establishment of an information system to ensure good governance of scientific research in the Moroccan university, is one of the good solutions that will allow the actors involved in the research activity to work independently, transparently and responsibly adopting a participative approach.

Based on moroccan experience, this work aims to show how an information system can be a good tool to insure the governance of Scientific Research in the Moroccan university.

Keywords: Moroccan University, Scientific Research, Information System, Management, Communication, Information Security.

I. INTRODUCTION

The technological revolution in the world encourages University to adopt new sharing and communication tools for meeting the needs of its socio-economic environment [1]. So it

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permits the growth of the economy and the sustainable development of a country[2]. A good use of these tools allows universities to manage their research by the rationalization of human and material resources and the opening of a portal collaboration with the various stakeholders involved in scientific research. So the Knowledge, in real time, becomes a key factor in the success of the essential business strategy[3]. Currently the Information System "IS" is a necessary device that meets all these objectives. It is also a mean of connection to the internal and external world of the university, which contributes to the democratization of information. The logic of social development dictates the need to direct a managerial attention to knowledge management [4]. This "IS" highlights the important role of information in the organization's operating processes and systematically addresses major [5]. In this case, the value of good communication and effective exchange of information are important to participate in the management and decision making[6]. In Morocco, we opted for the establishment of an "IS" at universities to have an easy access to information related to scientific research, and this through the placement of functional blocks [7].

The establishment of an Information System as a management tool for the management and communication of research aims to:

- Allow all university stakeholders (teacher, researcher, students, administrator, and socio-economic partners) to use a computerized work environment;
- allow this category of users to access it simply and in a unified way to have, publish and share information;
- ensure interaction and rapprochement between the two academic and industrial poles
- involve all internal and external actors in the development of the region socially and economically;
- ensure a secure platform for all types of risk in order to protect and keep all information;
- involve the university's research structures in the Information System governance strategy (IT-Governance).

To do, a number of Fars topics of scientific research will be considered: in this work we present 3 of them : -management of the human resources section, -management of scientific research laboratory and management of deliverables.

II. METHODOLOGICAL FRAMEWORK

Within the framework of this work, we will focus on the MISSION project [8], a project coordinated by Hassan 1er University for a period of 3 years (2012-2015), it associates 22 university and institutional partners from Morocco and the EU. The project consists of improving the management of universities by setting up an Operational Information System Service "SSI".

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The MISSION project responds to Moroccan priorities in terms of governance reform, namely: Management, quality assurance and institutional and financial autonomy.

The main objective of the project is the establishment of an Operational Information System Service in Moroccan universities "MISSION". This solution is the integration of 5 items : Students affairs, Finance, Patrimony, Human Resources Management and Management of Scientific Research.



Figure 1 : Items treated by the MISSION project

Using an Integrated ERP (Enterprise Resource Planning) which is defined as being a configurable, modular and integrated IT application [9], universities can enter data and feed their departments with real-time information. This developed information system makes it possible to edit statistics, dashboards relating to key performance indicators specified in the specifications detailing the business process diagrams.

Given the importance of the scientific research « SR » module in the university and in the governance system of Moroccan universities, This work will look at this aspect of research in order to promote its activities and have data on its structures. To this end, we will focus on the platform set up by the MISSION project and which aims to manage research structures.

The aim is to show how well this platform meets the needs of the governance of scientific research at Hassan 1er University as a pilot university. We therefore present the SR-sections developed by the project, its results and its flaws relating to the research component.

III. HUMAN RESOURCE MANAGEMENT

Although this seems to be a simple rubric in a recording platform, it requires utmost importance, because it is the source of all information that will arise in the future. Good management of this database will allow us to manage the rest. This section must also be an internal resource sharing means to derive the maximum benefit and profitability. As already mentioned in the introduction IS should provide some comfort in the work and good career management. Before tackling this section we should first start by making an inventory of the existing, then raised the mechanisms of operation, so analyze before making a proposal for improvement.

This section will be devoted to group together all stakeholders in the scientific research, outline detailing the key information needed will be established. These stakeholders are called upon to identify and learn from the canvas to get a login and password, validated by the director of the research structure, these identifiers allows them to use the authorizations given by the different functions in the Information System. Once grouped, all this information will help provide real-time statistics on the entire body of research structures and stakeholders in terms of quality and quantity as well as information on the subject of scientific research topics at of the University. The figure bellow gives a global idea about the platform:

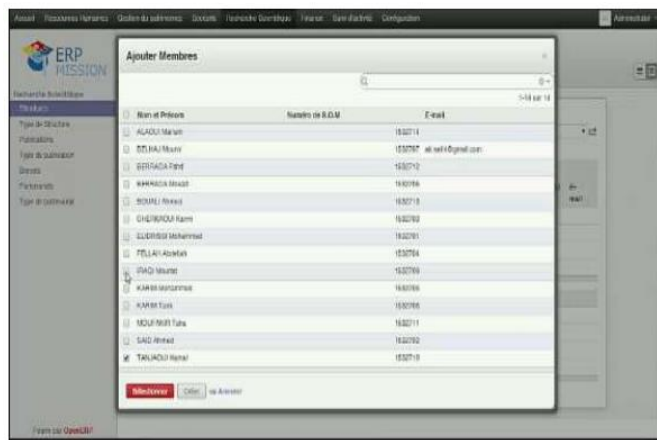


Figure 2 : Human Management Ressources platform

IV. MANAGEMENT OF SCIENTIFIC RESEARCH LABORATORY

The management of this section is a responsibility of the directors of research structures. We can find two types of information:

- Public information concerns the number of structures, their members, their research areas and even the equipment issued to each structure;

• Private information represents the status of the work of these structures. This information can only be accessed by those involved and becomes public after their completion.

Several actors are involved in scientific research either directly or indirectly we can identify the following actors:

- The Committee on Research, which brings together representatives of all stakeholders related to research
- Research units, each belonging to its corresponding section
- Research Teams

In this section the different research structures will be listed in detail: the number of stakeholders in each structure, the topics, the progress of the work of each axis or research subject and even material and equipment granted to each structure. This will allow us to have a global idea about the human and material resources in the university allocate for scientific research so permit to identify all needs and deficiency in this area for improved visibility and good management. On the other hand show the different possible opportunity to pool human and material resources for a better profitability of research in the university. This figure approach us about what will be the rubric by an IS:

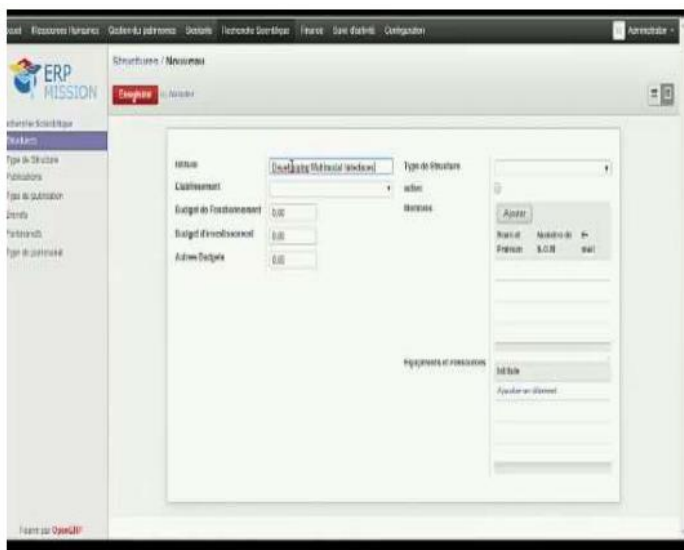


Figure 3 : Management of Research Laboratory platform

elsewhere and also communicate this type of information. The information system as a concept of management and communication can organize this part of research; it will allow each user entitled to access to provide a partial or a complete information about its research work either part of thesis, a summary of patent or a paper or also an article. This information should be published in the section so that the supervisor or other actor's structures are aware of the progress of work of its members. Until then, we were provided a portion of work, once it is finalized and validated by the responsible unit, we have the right to have and consult all of the information, it allows a publication of work, disclosure and it may cause interaction with other structures involved research areas in order to pool resources and better develop this research. The main objective is to have a general idea about the progress of his research work state, so it can generate working together with other research structures of members who are interested in the same issue or they work on the same axis searching but on other dimensions. In addition, this section will administer all activities in relations with doctoral students: the user (PhD) record any information regarding any training planned as part of his research he attended, according to an outline details this information is returned to supervisor belonging to one research structures for validation. Once it's done systematically it will give us an idea about the PhD student's activities during his years of research following the required charter.

As we can see in this figure:

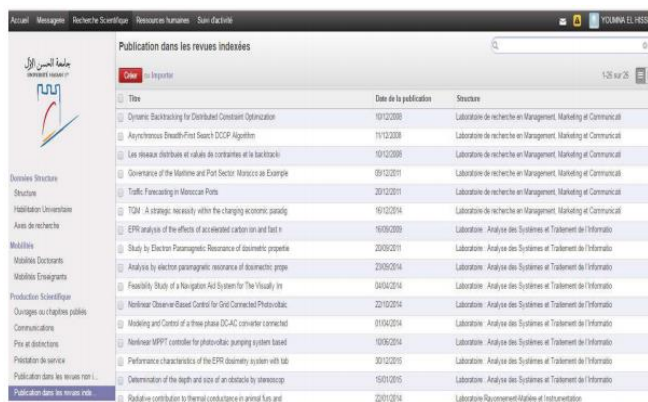


Figure 4 : Management of deliverables platform

V. DELIVERABLES MANAGEMENT: THESIS, RESEARCH PAPERS, PATENTS

Deliverables of university research structures is a criterion of scientific production, on which it is based to assess research in the university. These are the results of the work and activities of all the research structures within the university that can value them. Good management of this part evaluates the work of research to enhance the value within the university and

CONCLUSION

In Morocco, scientific research has long remained the weak link in the governance of universities, so several actions and projects have tried to resolve this problem in order to promote its activities, structure its units and communicate around its results.

These goals cannot be achieved without implementing information-based management. Available, reliable information shared and which will contribute to the

transmission of knowledge and knowledge which helps us to make the most effective decision.

Governance has emerged as an approach that can regularize research activity, optimize its resources and structure its units with the overall objective of continuously enhancing and evaluating scientific research in Moroccan universities.

The establishment of an Information System as a management tool for the management and communication of research aims to:

- Allow all university stakeholders (teacher, researcher, students, administrator, and socioeconomic partners) to use a computerized work environment;
- allow this category of users to access it easily and unified way to have, publish and share information;
- ensure interaction and rapprochement between the two academic and industrial poles
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- involve the university's research structures in the Information System governance strategy (IT-Governance).

Hence the importance of measure the performance of this Information System to ensure an efficient governance of Scientific Research in moroccan university, next work will focus on about maturity security and governance of Information System.

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